

## **Taxonomic Notes on Ants of the Genus *Megalomyrmex* Forel, with the Description of New Species (Hymenoptera, Formicidae)**

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(With 12 text-figures)

The genus *Megalomyrmex* was first created for a small group of Neotropical ants distinguished by fairly large size (10 mm), besides other characters. In the meantime, small species have also been added to the genus, the tiniest member being so far *drifti*, which measures little over 2 mm in length. The genus is strictly Neotropical, distributed from southern Mexico to central Chile, northeastern Argentina and southeastern Brazil. These ants, according to presently available collecting records, are by no means common. Material is generally scarce in the collections.

Ettershank (1966) has revised the generic diagnosis and given a resumé of what is known of the biology of the species. The species-level taxonomy of the group is still in a primitive state. The existing keys are completely out of date; the first, by Emery (1890), because it deals only with four of the five species then known; the second, by Wheeler (1925), because it is mostly a compilation from the literature and uses characters of doubtful value in specific discrimination. Only *silvestrii* was recently revised (Kempf & Brown, 1968), with copious synonymy resulting from this critical study. There still is a need to detect and define good diagnostic characters for the species, indispensable for the elaboration of good keys.

The present paper presents a taxonomic contribution to the knowledge of the group but is no attempt at a full-scale revision. Three new species are added to the genus; three species already described are discussed.

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In citing measurements and proportions, abbreviations standard in Brown's and Kempf's work are used:

Head length (HL), maximum measurable length of head proper as seen from dorsal full-face view, including all of clypeus and occipital lobes.

Head width (HW) is the maximum width of the cranium measured in the same view as for HL (includes also the eyes, when protruding laterally).

Scape length (SL) is the chord length of the antennal scape.

Weber's length (WL), oblique length of thorax (alitrunk) from side view, measuring from base of anterior pronotal declivity to metasternal extremity.

Hind femur length (HfL) is the chord length of the hind femur.

Total length (TL) of the body is the summed length of HL (plus closed mandibles), WL, plus the axial lengths of petiole, postpetiole and gaster measured separately.

Cephalic index (CI), head width expressed as a percentage of head length, or  $HW/HL \times 100$ .

**Megalomyrmex glaesarius** n. sp.

(Figs. 1, 2)

Worker (holotype). — TL 7.3 (7.1-7.7) mm; HL 1.59 (1.51-1.64) mm; HW 1.43 (1.38-1.48) mm; CI 90 (89-91); SL 1.79 (1.74-1.89) mm; maximum diameter of eyes 0.31 mm; WL 2.26 (2.15-2.31) mm; HfL 2.05 (2.00-2.10) mm. — Amber-colored; mandibles and funiculi slightly darker, reddish brown; gaster fuscous brown to black. Integument smooth and shining throughout, with the following exceptions: mandibles coarsely striate; frontal carinae finely to indistinctly striolate; lateral portions of clypeus and inferior portions of cheeks for a very short distance finely striate; upper portion of cheeks completely striate, forming concentric arches around antennal socket; antennal scapes slightly roughened. Body densely clothed with fine, flexuous, yellowish hairs of variable length, none longer than maximum diameter of eyes, erect to suberect on clypeus, dorsum of head, dorsum of thorax including sides of declivous face of propodeum, summit of petiole and postpetiole; oblique on mandibles, sides of head, antennae, legs and gaster. Pubescence confined to funicular segments of antennae. Full set of clypeal setae, as defined by Ettershank (1966: 77) present.

Head as shown in Fig. 1; note the gently convex sides and the fully rounded, semicircular occiput. Occipital carina very low, not visible in full-face view. Mandibles with 5 teeth, the apical one strongest, the remaining ones gradually decreasing in size basad. Clypeus truncate anteriorly in the middle, continuously arched caudad and horizontally extending between the narrow frontal carinae; the latter slightly convex and obliquely raised laterad; frontal area distinct. Compound eyes very gently convex, with more than 15 facets across the greatest diameter, situated somewhat behind the middle of length of head capsule, not protruding beyond sides of head in full-face view. Inferior occipital corner not protruding, margined by the lateral end of the occipital carina which does not extend forward under the occipital corner. Antennal scapes longer than head capsule; funiculus 11-segmented, all segments longer than broad; segments IX-XI forming a distinct but not conspicuously thickened apical club.

Thorax as shown in Fig. 2. Promesonotal suture present and impressed; mesonotum, in side-view, rising as a low hump a little above the pronotum; metanotal groove deeply impressed, continuing downwards on the sides. Dorsal face of propodeum

depressed, gently convex in both directions in front, then transversely impressed at the middle, with a sagittal impression on posterior half, flanked by a pair of low tumuli at the posterior corner; declivous face oblique. Propodeal spiracle relatively small, rounded; bulla of metapleural gland covered with faint horizontal ridges; propodeal plates rounded, dorsally connected with each other on declivous face by a transverse carina. Middle and hind tibiae with simple apical spurs. Pedicel segments as customary in the genus; petiole nearly as high as long, subpetiolar process in front minute; postpetiole nearly as high as petiole, slightly broader (10:9); subpostpetiolar process blunt and tubercular. Gaster lacking an anterior truncation.

**Types.** — 36 workers (holotype and paratypes) from the same nest series taken on an unknown date by W. Weyrauch at Llama, northern Peru, at an altitude of 2350 m (Weyrauch accession number 1069), all deposited in my collection (WWK).

**Variation.** — The range of the critical measurements of the type series has already been given above in the description of the holotype. For the rest, all specimens are very much alike, except for the deepness of the dorsal propodeal impression, the steepness of the declivous face, and the sculpture of the propodeal tumuli which, in a few specimens, bear faint transverse striae that may even cross the median furrow.

**Discussion.** — The present species belongs to the *goeldii*-group (cf. Ettershank, 1966: 103), being closest to *foreli*, *wallacei* and *jheringi*. *M. foreli* exhibits the following differences from *glaesarius*: Mandibles smooth; eyes placed more forward on sides of head; occipital flange stronger, visible in full-face view; promesonotal suture present but mesonotum scarcely raised above pronotum, subcontinuous with the latter in profile; posterior corners of basal face of propodeum (epinotum) with a pair of prominent, pointed tubercles; hind femora longer than thorax (WL); subpostpetiolar process acute, spine-like. *M. wallacei* lacks the contrasting colors of *glaesarius*, has a much narrower and more elongate head, with the occipital flange quite visible in full-face view on the drawn-out occiput; in addition, the eyes are much larger and protruding beyond sides of head; vertex, dorsum of thorax, summits of petiole and postpetiole finely sculptured and subopaque; basal face of propodeum with a sagittal furrow through its entire length, the posterior corners not bulging nor tubercular. *M. jheringi* is uniformly amber-colored; mandibles almost smooth, striae obsolescent; promesonotal suture superficial, not impressed, promesonotum continuous in profile; basal face of propodeum lacking the postero-median sagittal impression and the tubercular corners. As regards the contrasting body color, *bicolor* from Chile is closest, but of much smaller size; it has a subrectangular head, with the occipital corners narrowly rounded; the antennal scapes shorter than head length, the promesonotum continuous without a promesonotal suture; the dorsal face of propodeum not depressed, without a deep posterior sagittal impression on basal face; posterior corners not tubercular.

**Megalomyrmex weyrauchi** n. sp.

(Figs. 3, 4)

Worker (holotype). — TL 5.4 (5.0-5.9) mm; HL 1.21 (1.13-1.27) mm; HW 1.08 (1.00-1.13) mm; CI 89 (87-91); SL 1.19 (1.13-1.24) mm; maximum diameter of eyes 0.27 (0.24-0.28) mm; WL 1.59 (1.45-1.65) mm; HfL 1.35 (1.29-1.40) mm. — Similar to the preceding *glaesarius*, with the following differences:

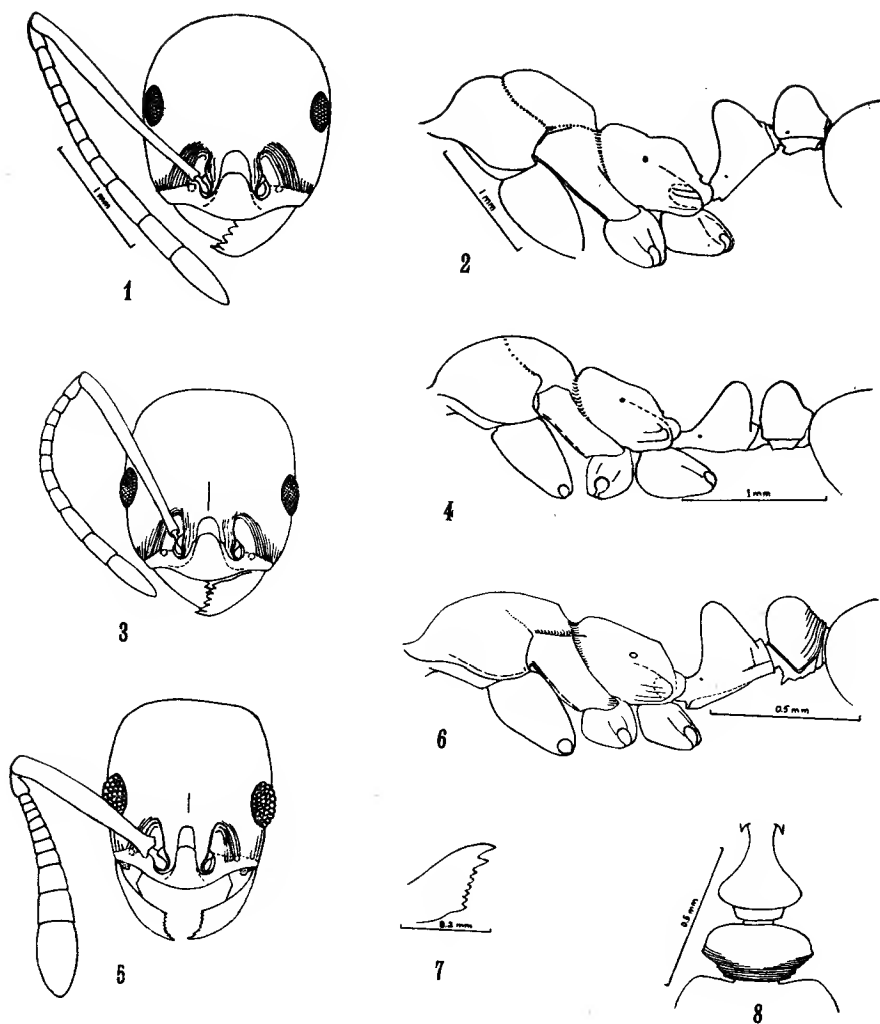
Body color piceous brown, appearing black. Lateral striae on cheeks a little longer. Mandibles with the piligerous points drawn-out and elongate, but not truly striate. Propodeal dorsum lacking any trace of transverse striae, completely smooth.

Head as shown in Fig. 3; occipital corners narrowly rounded, occipital border straight in the middle. Mandibles with 6 (or 5) teeth (a variable condition in the specimens of the type series). Frontal suture present, shown by a sagittal impressed streak behind the impressed frontal area. Eyes moderately convex, somewhat protruding beyond sides of head in full-face view; situated at the middle of total head length. Antennal scapes slightly shorter than head capsule. Thorax as shown in Fig. 4; note the continuously vaulted promesonotum. Promesonotal suture obsolete. Propodeum with a shallow sagittal impression on dorsum through its entire length; posterior corners not tumuliform; declivous face more sloping, not so steep as in *glaesarius*. Subpetiolar process present in the form of a minute denticle. Subpostpetiolar process not developed.

Types. — 29 workers (holotype and paratypes) taken on an unknown date by W. Weyrauch at Llama, northern Peru, at an altitude of 2350 m (Weyrauch accession number 1070), all deposited in my collection (WWK).

Variation. — Besides the range of critical measurements, already given above, and the variation in the number of mandibular teeth (5-6) no other discrepancy has been observed in the specimens examined.

Discussion. — The present species is very close to *M. jheringi* from eastern São Paulo State, Brazil, differing chiefly in the piceous color, the shorter antennal scapes which never exceed the head length, the lateral striae on cheeks which are strong and nearly attain the eyes, the occipital carina which is better developed laterally where it even extends forward under the head for a short distance, the relatively short mesonotum which is not longer than broad, the dorsal connecting ridge between propodeal plates, which is well developed in *weyrauchi*, and vestigial to obsolete in *jheringi*.

*Megalomyrmex* — Workers

*M. glaesarius* n. sp. — Fig. 1. Head; Fig. 2. Thorax and pedicel. — *M. weyrauchi* n. sp. — Fig. 3. Head; Fig. 4. Thorax and pedicel. — *M. gnomus* n. sp. — Fig. 5. Head; Fig. 6. Thorax and pedicel; Fig. 7. Apex of mandible; Fig. 8. Pedicel in dorsal view (Kempf del.).

The species is dedicated to its collector, Prof. Dr. Wolfgang Weyrauch, as a sign of gratitude for the many fine specimens he has been sending me over the years.

### ***Megalomyrmex bicolor* Ettershank**

*Megalomyrmex bicolor* Ettershank, 1965: 55-58, pl. 4 (Worker; Chile, Coquimbo Province: La Serena, Cerro Pachon).

A paratype worker (received from the Museum of Comparative Zoology at Harvard through the mediation of Dr. W. L. Brown, Jr.) offers the opportunity to complement the original diagnosis:

**Worker** (paratype). — HL 1.00 mm; HW 0.89 mm; CI 89; maximum diameter of eyes 0.20 mm; SL 0.89 mm; WL 1.29 mm; HfL 0.94 mm. Mandibles striate. Antennal scape shorter than head length. Occipital carina weak to vestigial, not visible from above. Promesonotal suture at best vestigial, promesonotum forming a continuous hump. Basal face of propodeum not depressed, bearing a weak sagittal impression. Hind femora distinctly shorter than thorax length. Middle and hind tibiae with apical spurs. Connecting ridge on declivous face of propodeum, between propodeal plates, practically absent.

The paratype disagrees with Ettershank's description and figure by having a narrower head (CI given 94-96, whereas the paratype examined and the following three specimens present a CI 89-92).

Through the courtesy of Prof. V. Pérez, I received three additional workers, taken by G. Kuschel and L. Peña at Algarrobo, Valparaíso Province, Chile, on July 21, 1951. More specimens are in the Santiago Natural History Museum. The following characters express the variational trend of the species: HL 0.96-1.08 mm; HW 0.85-1.00 mm; cephalic index 89-92; maximum diameter of eyes 0.19-0.22 mm; SL 0.86-0.94 mm; WL 1.21-1.35 mm; HfL 0.87-1.11 mm. Head as dark as gaster, only thorax, pedicel and legs are amber-colored; striae on cheeks heavier, the lateral ones attaining the anterior orbit of eyes; clypeus more strongly truncate.

### ***Megalomyrmex gnomus* n. sp.**

(Figs. 5-8)

**Worker** (holotype). — TL 2.8 mm; HL 0.60 (0.58) mm; HW 0.55 (0.52) mm; CI 91 (89-93); SL 0.51 mm; maximum diameter of eyes 0.16 (0.17) mm; WL 0.82 (0.79-0.80) mm; petiole width 0.24 (0.23) mm; postpetiole width 0.33 mm; HfL 0.58 (0.57) mm. — Bicolored species; body and appendages yellowish-brown; gaster piceous brown; chewing border of

mandibles piceous. Integument smooth and shining; frontal carinae, antennal fossae, cheeks, metapleura, posterior face of postpetiole bearing fine costulae or striae. Pilosity moderately abundant, of variable length, longest (on summit of petiole and postpetiole) equal to, or slightly exceeding, maximum diameter of eyes; usually erect or suberect, oblique and short on scapes, oblique to subappressed and short on legs; fine pubescence only on funiculi.

Head as shown in Fig. 5. Clypeal border strongly convex, sides and occiput very gently convex, occipital corners narrowly rounded. Mandibles (Fig. 7) with strong apical and subapical tooth and basad 6 small denticles. Clypeus strongly truncate in front, perpendicular to cephalic dorsum, its postero-median portion wedged in between frontal carinae; the latter narrow, slightly diverging caudad, nearly straight. Frontal area impressed. Frontal suture vestigial. Eyes comparatively large, gently convex, slightly protruding laterad beyond sides of head, with about 10 facets across its greatest diameter. Occipital carinule low, invisible from above in full-face view, but distinct, laterally extending forward for a short distance under the occipital corners. Antennal scape thick, shorter than head length. Funiculus unusually stout, segments II-VIII transverse, i. e. broader than long, IX-X about as long as broad, XI longer than IX and X combined.

Thorax as shown in Fig. 6. Promesonotum continuously vaulted without a distinct promesonotal suture; about as long as broad when seen from above. Metanotal suture deeply impressed. Dorsal face of propodeum longer than declivous face, flat, the posterior corner obtusely angular. Connecting ridge between propodeal plates well-developed. Propodeal spiracle small, round. Metapleural gland somewhat bulging, covered with ridges. Mid and hind tibiae with a simple but strong apical spur. Hind femora shorter than thorax length.

Pedicel segments as shown in Figs. 6 and 8. Petiole higher but narrower than postpetiole, the subpetiolar process consisting in a narrow, long, sagittal, semitranslucid flange enclosing at its anterior tip a solid denticle; base of scale postero-laterally separated from body of petiole by a short horizontal ridge. Postpetiole strikingly transverse, almost twice as broad as long (25: 15); lateral portions of tergum projecting laterad and downwards, terminating in a pointed and protruding lobe. Posterior face of postpetiole and articular collar for gastric insertion transversely costulate. Subpostpetiolar process in the form of a



small but conspicuously projecting spine. Gaster anteriorly truncate (Fig. 8) when seen from above.

Types. — 3 workers (holotype and paratypes), taken on October 18, 1953 by C. R. Gonçalves at Corumbá, Mato Grosso State, Brazil, deposited in my collection (WWK).

Variation. — The paratypes, aside from the insignificant differences as regards the critical measurements, already given above, agree completely with the holotype.

Discussion. — On account of its peculiar mandibular dentition and the incrassate three-segmented apical club of the funiculi, this species belongs to a group which would presently include *silvestrii*, *incisus* and *drifti*.

*M. silvestrii* differs from *gnomus* in scape length which exceeds head length, much less transverse postpetiole (lacking also the bulging lateral lobes), considerably larger size, more elongate head, mandibular dentition with more than 10 small denticles besides the normal apical and subapical teeth. *M. incisus* is distinct by larger size, black color, large eyes which measure at least one third of head length, broad petiole which nearly attains width of postpetiole, mandibular dentition, although basically similar to that of *gnomus*, presenting the basal denticles unequal in length, the second basal tooth strikingly salient, at least in the three specimens seen. *M. drifti* is still smaller than *gnomus* and differs chiefly in the black color, the carinate clypeus (as in most *Solenopsis* spp.) and simple postpetiolar tergum lacking a protruding lateral lobe.

### **Megalomyrmex silvestrii** Wheeler

*Megalomyrmex silvestrii* Wheeler, 1909: 236 (Worker; Mexico, Vera Cruz: Córdoba).  
— Kempf & Brown, 1958: 97 (Revision, synonymy).

After our joint revision of this species (Kempf & Brown, 1968), I had a second look at the specimens at hand, associated with the present species. While the established synonymy holds true, some of the specimens which we associated with *silvestrii* do now appear to be something different. I am referring to the specimens collected by Brown at Igarapé Marianil, Amazonas State, Brazil. On account of the peculiar shape of the postpetiole, in the same fashion as just described for the preceding *gnomus*, these specimens do not belong to *silvestrii*. A further analysis of this form, whether it is a new species or something already known under a different name, must be left for another study, since the material at hand is not enough for solving this question.

***Megalomyrmex drifti* Kempf**

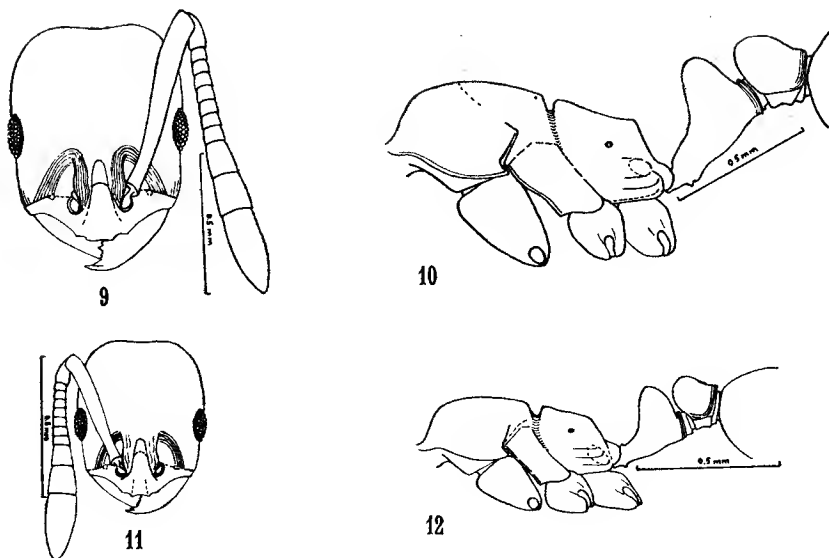
(Figs. 9-12)

*Megalomyrmex drifti* Kempf, 1961: 504, figs. 9-11 (Worker, female; Suriname: Dirkshoop).

When describing this species upon a small series of workers and one female, taken together from the same soil sample in primary forest, I had in my collection numerous specimens from southeastern Brazil, all berlesate samples collected by Mr. F. Plaumann, which appeared close to, but specifically distinct from, *drifti*. In the meantime, I have received more material of this group, including a decisive sample from Peru. In spite of the conspicuous differences between the extremes, i. e. the *drifti* types and the numerous southeastern Brazilian specimens, intermediates have been found that apparently bridge the gap, so that the ensemble, at this stage of the investigation, seems nothing more than a morphocline of the same species. In the following I want to characterize briefly the principal morphs and cite the pertinent specimens:

a) *drifti* (typical): Workers (and females) distinguished by smaller size, scape shorter than head width, promesonotal suture completely absent, propodeum broadly rounded at posterior corner of basal face (Figs. 11, 12). Measurements: HL 0.48-0.59 mm; HW 0.39-0.48 mm; SL 0.37-0.46 mm; WL 0.59-0.69 mm; HfL 0.39-0.48 mm. Specimens from Suriname (*drifti* types) and from Brasil, São Paulo State: Jacupiranga (Plaumann leg.) and Tabatinga (Lenko leg.); Mato Grosso State: Utiariti (Lenko leg.).

b) Variant from southeastern Brasil: Workers (and females) distinguished by larger size, scape longer than head width, promesonotal suture vestigial on dorsum of thorax, propodeum distinctly angulate to subdentate at posterior corner of basal face (Figs. 9, 10). Measurements: HL 0.60-0.70 mm; HW 0.51-0.59 mm; SL 0.53-0.63 mm; WL 0.77-0.94 mm; HfL 0.53-0.65 mm. Specimens from Brasil (all taken by F. Plaumann, unless noted otherwise): Rio Grande do Sul: Nova Petrópolis, Barros-Cassal, Morro Reuter, Sinimbu; Santa Catarina: Chapecó, Nova Teutônia; Paraná: Bocaiuva do Sul, Laranjeiras, Rio Azul; São Paulo: Serra dos Agudos Grandes, Jacupiranga (where also the typical *drifti* was taken in the same sample, but not necessarily from the same colony), Serra da Cantareira (Kemp f leg.); Rio de Janeiro: Itatiaia (T. Borgmeier leg.); Guanabara: Floresta da Tijuca (A. C. Campos Seabra).



*Megalomyrmex drifti* — Workers

Form from SE Brazil (Bocaiuva, PR) — Fig. 9. Head; Fig. 10. Thorax and pedicel. — Typical form from Suriname (holotype). — Fig. 11. Head; Fig. 12. Thorax and pedicel (Kempf *del.*).

c) Peruvian variant: One series of 24 workers and 1 female, from Valle Chanchamayo, 800 m, September 17, 1960, W. Weyrauch leg. (n. 1118). Worker (and female) distinguished by intermediate size, scape longer than head length, promesonotal suture absent, propodeal corner at posterior end of basal face broadly rounded, not angulate. Measurements: HL 0.59-0.60 mm; HW 0.49-0.52 mm; SL 0.51-0.53 mm; WL 0.73-0.77 mm; HfL 0.52-0.55 mm. As said before, this sample bridges the gap between the extremes, although even among the material from southeastern Brazil (group b) are specimens, especially from the northern part of the area, that get already closer to the conditions obtained in *drifti*.

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